

WHAT IS CLAIMED IS

1. A magnetic multilayer film deposition system comprising a plurality of treatment chambers for depositing a multilayer film including a plurality of magnetic films on a substrate, a conveyor for conveying said substrate on which a film is deposited in a state shielded from the atmosphere, and a metal film treatment chamber, provided with:

a treatment device for treating the metal film included in said multilayer film in the metal film treatment chamber,

an optical measuring device for optically evaluating the state of said metal film, and

a controller for controlling the operation of said treatment device based on a measurement signal output from said optical measuring device.

2. The magnetic multilayer film deposition system as set forth in claim 1, wherein said optical measuring device is a reflection infrared spectrophotometer and is comprised of a light source for generating infrared light provided at the outside of the metal film treatment chamber, an incident window for guiding said infrared light to the surface of said metal film of said substrate arranged in said treatment chamber, a reflected light window for taking out measurement light passing the surface of said metal film to the outside of said treatment chamber, a detector for detecting said measurement light, and a processor for determining the state of the film from a detected signal.

3. The magnetic multilayer film deposition system as set forth in claim 2, wherein said measurement light is light arising at the interface between a treated part and nontreated part of said metal film.

4. The magnetic multilayer film deposition system as set forth in claim 2, wherein said measurement light is infrared light reflected by relation with another film positioned at the back surface of said metal film.

5. The magnetic multilayer film deposition system as set forth in claim 1, wherein said plurality of treatment chambers and said metal film treatment chamber are arranged around said conveyance chamber provided with said conveyor, said substrate is moved in a state shielded from the atmosphere, and the evaluation process of said metal film in said metal film treatment chamber is performed in a vacuum.

6. The magnetic multilayer film deposition system as set forth in claim 1, wherein the treatment performed in said metal film treatment chamber is oxidation treatment.

7. A method of deposition of a magnetic multilayer film for depositing a multilayer film including a plurality of magnetic films on a substrate, wherein metal film included in said multilayer film is optimally treated while optically measuring and evaluating the state of said metal film at a stage in the middle of film deposition and in a state shielded from the atmosphere.

8. The method of deposition of a magnetic multilayer film as set forth in claim 7, wherein the state of said metal film is measured and evaluated based on detection of the state of oxidation of said metal film.

9. A method of evaluation of deposition of a metal film on a substrate comprising treating said metal film in a state shielded from the atmosphere and evaluating the state of progress of treatment at said metal film while optically

measuring the relationship between a treated part and nontreated part of said metal film.

10. The method of evaluation of film deposition as set forth in claim 9, wherein the treatment state of said metal film is evaluated based on detection of the state of oxidation of said metal film.

11. The method of evaluation of film deposition as set forth in claim 10, wherein said metal film is made of Al and the increase in said oxidized part is evaluated from the difference in absorption intensity of a peak position (Al-O) of an oxidized part expressed by oxidation based on the Al before oxidation for light of a predetermined frequency.

12. A method of control of deposition of a metal film on a substrate comprising oxidizing said metal film in a state shielded from the atmosphere, optically measuring the relationship between said oxidized part and nonoxidized parts of said metal film, and evaluating the state of progress of oxidation at said metal film.